

Lower Murray Landscape Futures Project (www.landscapefutures.com.au)

KEY MESSAGES

Business as usual is not an option

A business as usual approach, based on what has worked in the past, is not likely to work in the future. There is significant evidence that we are moving further and further away from past climate conditions. The table below summarizes the compelling measures of changing climate in Australia.

The implications of these changes for landscapes in southern Australia are far reaching. Yields and economic returns from traditional cropping and grazing systems are likely to become more variable and generally decrease. Surface runoff and groundwater discharge to rivers will decrease, leading to lower water allocations for irrigated agriculture. On the plus side, there is likely to be less deep drainage and hence, less risk of dryland salinity. The rate of ecological decline is likely to quicken, and the risk of wind erosion and dust storms is likely to increase.

Evidence of changing climate conditions in Australia

Concentrations of greenhouse gases in the atmosphere are increasing

Concentrations of greenhouse gases in the atmosphere have increased significantly over the last 100 years. For the past 800,000 years and possibly the past 20 million years, levels of just one greenhouse gas, carbon dioxide, have been between 180 and 300 parts per million (ppm). The level in 2009 of 386 ppm is much higher than the natural average.

Australia is getting hotter

All of Australia has experienced warming over the last five decades and some areas have experienced an increase in average temperature by 1.5 - 2°C. Also, the number of record hot days per annum has been increasing each decade since the 1960's and the number of record cold days per annum has been decreasing over the same time period.

There is less rainfall where most Australians live

Over the last five decades, rainfall has increased in northern and central Australia and decreased in eastern and southern Australia. The decrease varies between 5 and 50 mm/year.

Sea surface temperatures are rising

Sea surface temperatures in the Australasian region have increased by about 0.4°C over the last 50 years.

The sea level is rising

The global mean sea level has risen by about 200mm since 1870. Since 1993, sea level rise, mostly resulting from thermal expansion has been 1.5 to 3 mm/year in southern and eastern Australia and 7 to 10 mm/year in northern and western Australia.

Source: State of the Climate. CSIRO and BoM (2010). www.bom.gov.au/climate

The future is in our hands

Policy makers, regional leaders and local innovators can influence our landscapes and livelihoods just as much as a hotter and drier climate. The look and function of our future landscapes are determined by the decisions we make today.

Leaders can assist communities manage change and contribute to resilience by establishing and supporting learning groups, guiding the assessment of development applications and adapting local practices to align with the regional climate change adaptation plan. With a changing climate, resilience can be increased by matching land use to the most suited areas and retrofitting or retiring current use in unsuitable areas.

In the Lower Murray, additional increases in river salinity could be offset with 3 to 5 times the current investment in salt interception. Some policy incentives to improve irrigation efficiency and consolidation of irrigation in lower impact areas may be justified. Flow control structures may be required to protect river floodplain ecosystems from saline groundwater.

Around two million hectares of land should be managed differently to achieve community aspirations. Although some actions (e.g. conservation farming) require a small change, others require conversion of one form of agriculture to another (e.g. from marginal grain crops to tree crops).

Build smarter, greener economies

Developing green economies is a good guide for adapting policies, plans and local practices. Coal and oil are becoming more expensive as the cheap global reserves dwindle. This means there are emerging opportunities for the production of source materials and generation and supply of renewable energy including biofuels, biogas, and biomass.

Policy measures such as a carbon trading scheme being considered by the Australian Government, if implemented, would make green energy more competitive. By growing crops and trees for biofuel and biomass, farmers could capitalise on growing national and international demand for energy, and also contribute to improving the condition of natural resources. However, profitability of these new production systems is not guaranteed for every location and development will be risky especially without smartly designed incentives and structured support from government.

As transport costs increase there will be increasing advantage in manufacturing and value adding close to primary sources. More competitive businesses will identify new value chains and capitalise on using current 'waste'.